cellor of the Exchequer, and to the Secretary of the Treasury (by whom the deputation was introduced), for having favoured us with an interview and patiently listened to our appeal for Government aid.

"The grounds of our claim were stated in our last report, and were naturally met by the remark that 'it would be a dangerous precedent to apply national funds for private purposes.' If all future applicants be compelled to

I. Raise 3,000*l.* by subscription ;
II. Bore 1,000 feet ; and
III. Obtain a memorial from the Royal Society, the Geological Society, and the Institute of Civil Engineers, stating that the prosecution of the work is of national importance ;

they are not likely to be troublesome by their numbers, and the subject having been ventilated in the House of Commons, few reasonable minds will be disposed to doubt the discretionary wisdom of the grant with its attendant conditions.

"We are much indebted to William Topley, Esq., F.G.S., for having consented to visit Belfast, there to read our report and make personal application for additional aid from the Committee of Recommendation of the British Association for the Advancement of Science, and we are greatly encouraged by the response and the grant of 100*l.*

"The kind promise of Sir Charles Blunt to give us 50*l.* on reaching 1,000 ft. has been faithfully performed ; so also will Mr. Warner's promise of 300*l.* when we reach 2,000 ft.

"In scientific research it has often occurred that the benefits accruing have been indirect and unexpected by the promoters. Not only have the rich beds of gypsum been made known, and, in consequence, are now in actual process of development, but the new facts ascertained by our work have thrown some considerable light (and that of an encouraging nature) on the problem of the feasibility of constructing a sub-marine tunnel between England and France.

"The motives which actuate our friends to subscribe are various and sometimes novel, as, for instance, one writes : 'I enclose my mite—besides the objects stated, a shaft is doubtless a safety valve against earthquakes.'"

The report concludes by thanking the directors of the London, Brighton, and South Coast, and the South Eastern Railways, for their assistance in the work, the latter company having, in addition to granting other privileges, in the use of their line, forwarded a cheque for 50*l.* The kindness of the Earl of Ashburnham, the Rev. T. Partington, and many others is acknowledged, and the honorary secretary concludes his report with an earnest hope for further encouragement, and that the results will prove that their labour has not been expended in vain.

NOTES

THE inhabitants of a vast district of London have had during the past week an opportunity of studying the phenomena of explosions on a large scale, and of noticing how closely they approach those of earthquakes in the sequence of long-rolling waves of the solid earth, loud noises, and finally long continued tremulous motion and more subdued sounds. If we could have announced last week that 100 barrels of gunpowder would explode in London, locality not defined, on a given day, the inhabitants would probably have been alarmed, many would certainly have visited their country friends ; but our Government have for years been warned that such an occurrence might happen seeing that there is no legislative enactment to ensure care, and yet they have let such a state of things continue ! We have it on the authority of the *Times* that the *Tilbury* might have had 500 barrels on board instead of 100, and it is clear that these might have exploded in a locality where the consequent destruction of life and property would be fearful to contemplate. It appears that, bad as are the regulations for the transport of gunpowder on board ship, there is little or no provision for the prevention of accidents at places where powder is received and delivered in large quantities. In reporting on this branch of the subject in 1865, Major-General Boxer instanced the case of Isleworth. He says :—"The powder wharf at Isleworth affords a good illustration. This wharf is situated in the town of Isleworth, on the banks of the Thames ; on an average as much as 600 barrels per week is shipped there, the wharf is surrounded by houses, and the sacrifice of life would be fearful in the event of an explosion." Major Majendie, in a report to Government two years ago, wrote :—"I am quite sure that if the public were at all aware of the extent to which gunpowder is handled in large quantities, without any special regulations, in the middle of the metropolis and of large cities, they would be seriously alarmed, and would demand the adoption of measures for removing so patent a danger." Truly we are a practical people, and much superior to the Germans, who only allow the transit of large quantities of gunpowder through populous districts under military escort.

THE effect of the explosion in the Zoological Gardens was not so serious as might have been expected from the proximity of the gardens to the scene of the disaster, but several of the animals were thrown into a state of great agitation. The elands, antelopes, and deer, particularly, were very much startled, and were found running round their enclosures in a state of great alarm. The elephant, hippopotamus and rhinoceros, and the giraffes were very much excited, and the birds became much alarmed. About a dozen of the smaller birds escaped through a hole in the glass roofs of the aviary, caused by the concussion, but two or three returned during the day. The blankets and coverings were shaken off the snakes, but fortunately none of the glass in their cages was fractured. It was fortunate, too, that none of the large carnivora were liberated.

WE referred some little time ago to the fact that a sum of about 30,000*l.* had been left to the "London Academy of Sciences." We hear that already several societies and institutions have sent in, or are thinking of sending in, claims. It is stated, however, that the Royal Society, which certainly is the nearest approach to the institution in Signor Ponti's mind, has not applied. The Royal Society is of course a mere private body, and might well be held to be justified in refusing to incur the responsibility of distributing a large sum for the furtherance of science ; but the miserable chaos in our scientific arrangements is none the less strongly brought out by the present juncture. In England, truly, Science is a body without a head !

FRANCE, Germany, and Austria are vying with each other in astronomical activity. In the grounds of the Paris Observatory a 4-ft. Foucault mirror is being erected, and M. Le Verrier has already obtained a grant for a 30-in. refractor. The Vienna Observatory is also making arrangements for the reception of a telescope of similar aperture. Messrs. Merz have nearly completed a lens of 20 in. aperture, for the University of Strassburg. In France, the newly-created *Ecole Speciale des Hautes Etudes* is being taken advantage of to form a school of Astronomy ; in Germany and America many such schools exist already, thanks to the rational administration of their Observatories, the assistants in which are the pupils, friends, and potential successors of the director.

M. DESJARDINS, one of the head officials in the Ministry of Public Instruction, has been ordered by the Minister to inspect the meteorological service of the Observatory and to report upon its present condition.

THE Government of Newfoundland has determined to take steps for the protection of the seal fisheries, by preventing vessels from leaving port before a certain date, and are anxious to induce the Governments of other countries, whose subjects are engaged in other fishings, to take similar measures in respect to vessels leaving their respective ports. It is hoped thereby to establish an international convention, which will have the effect of giving the seals at least another month after the breeding season, in which the young may increase in size and value, and thus the fearful slaughter of immature seals which has threatened the total extermination of the animal will be checked.

THE ordinary business of the Paris Academy of Science was entirely suspended at the meeting on September 28, owing to the death of M. Elie de Beaumont. The burial took place on the 25th, the entire Academy attending their *confrère* to the grave. Funeral addresses were delivered by M. Dumas on behalf of the Academy, by M. Ch. Sainte-Claire Deville on behalf of the Mineralogical Section, by M. Daubrée in the name of the School of Mines, and by M. Laboulaye in the name of the French College.

THE President and Council of the Royal Society of Edinburgh, "impressed with the conviction that the progress of the sciences demands, and has long demanded, fuller and more exact tables of logarithms than any which at present exist," have memorialised Sir Stafford Northcote with the view of inducing the Government to print a nine-figure table of logarithms of numbers from unity to a million, part of which has been already calculated by Mr. Sang, who has carried a fifteen-figure table up to 300,000. The subject of undertaking the publication of logarithm tables—so long as the number of figures does not exceed ten, the limit of utility—is one well worthy the attention of the Government; but in the present case there are several reasons why, if the application is refused, the loss to science will not be so great as some might think. In the first place, a table of 1,800 large pages, whether in one, two, or three volumes, will be so unwieldy that, notwithstanding the ease of the interpolations, it would probably be very seldom used by computers; and secondly, because all who require more than seven figures will, no doubt, prefer to use ten, and consult the existing works. In fact, nearly all computers would, we believe, employ Vlacq or Vega in preference to the proposed table. Mr. Sang, in the pamphlet which accompanies the memorial, makes a remarkable error when he intimates that the great French tables have not been used to verify any seven-figure table, so that "up to the present moment we have no verification of Vlacq's great work." In point of fact, the whole of Vlacq was read with the copy of the French tables at the Paris Observatory, by M. Lefort, and the results of the comparison are published in vol. iv. of the "Annales de l'observatoire de Paris." Almost all the errors found by Mr. Sang by means of this table are among those there given by Lefort, and anyone who chooses can, without much expenditure of trouble, render his copy of Vlacq all but free from error—much more accurate than any new table could possibly be.

ATTENTION is being again directed to the cultivation of Cinchonas in St. Helena, which at one time promised so well, but which has, owing to changes in the Government, been allowed to lapse into decay. Some seven or eight years since, when the island was under the governorship of Sir Charles Elliott, Dr. Hooker strongly advised a trial of the plants to be made, and plantations were formed at Diana's Peak. So satisfactory was the progress of the plants that the Government consented to the selection of a gardener from amongst the best or most intelligent of those to be obtained at Kew. One was chosen and sent out, and, to quote from a recent number of the *St. Helena Guardian*, "All went well so long as Sir Charles Elliott was at the head of affairs: plantations were formed, and the gardener, Mr. Chalmers, was treated as one having the charge and responsibility of an important colonial experiment, and the plants grew well up to the time when Sir Charles Elliott left and Admiral Patey was appointed in his stead. The new governor at once decreed that the plantations at Diana's Peak were a mere foolish waste of money, that the gardener sent out from Kew would be better employed at Plantation House, and employed he was, chopping firewood and raising beans, peas, and radishes, and selling them for the benefit of the privy purse of Government House, and the Cinchona plantations were left to go to ruin or to flourish by their own unaided vigour, as the case might be." The result of three years' cultivation and three years' subsequent neglect seems to be, that although there are a few dead and sickly plants, nearly all the trees are in full vigour and luxuriant growth. There are about 300 flourishing plants, many of which are twelve feet high, and three to four feet in diameter. The bark is also a quarter of an inch thick, and has an intensely bitter quinine taste. Many of the plants in the St. Helena plantations have the lower part of their stems bound up with moss in order to try if the bark would not swell and increase more rapidly, but it has had the effect of showing, by the bursting out of rootlets from the part so bound with damp moss, that the plant throws forth roots readily from the bark, and thus may be easily propagated by cuttings. The Government has recently been again in correspondence with Dr. Hooker on this subject, and it is to be hoped that the cultivation will be again renewed and prosecuted continuously.

WE have been requested to publish the following extract of a letter recently received from Cambridge (Mass.):—"We have been very much amused by the pertinacity with which our friends on your side are determined to provide us with a successor to Prof. Agassiz, to fill a vacancy which has no existence and has been filled long since. Alex. Agassiz takes his father's place in the Museum, assisted by Count Pourtales and Col. Lyman, who attend more to the details; and the professorship has been divided, and separate professors appointed, one for zoology and one for geology. There is now therefore no vacant chair in Harvard, so far as I know, although Prof. Wyman is lately deceased; but I think he relinquished his duties some time since, on account of ill health. So I do not perceive the slightest chance for the numerous successors proposed in England or elsewhere."

THE French Geographical Society sent a deputation to Vienna to offer its official congratulations to the Hungro-Austrian Polar Expedition. It was very cordially reciprocated by Payer and his associates.

AN International Horticultural Exhibition will take place at Antwerp, commencing on April 4, 1875, under the auspices of the Royal Society of Horticulture and Agriculture of that town, and promises to be on a large scale. An International Exhibition of Fruits will also be held at Amsterdam in October 1875, under the management of an influential committee.

WE learn from the *Belgique Horticole* that that cryptogamic pest the *Puccinia malvacearum* is making sad havoc among the mallows and hollyhocks in some parts of Belgium.

WE are informed that the *Phylloxera* has appeared in Switzerland, and that the delegates of the wine-growing cantons met on Monday last, the 5th inst., to consider the best means of preventing its extension.

SOME excitement has been aroused in New York by the discovery of a rich vein of hæmatite iron ore in the heart of the city by some workmen who were digging foundations for a new building. The vein, which is 30 ft. wide, was found at a depth of only 4 ft. from the surface.

PROF. BENTLEY and Mr. Trimen are engaged in the production of a voluminous work on the medicinal plants of the world.

As there are not many works devoted to this important branch of botanical science, we shall gladly welcome this book, as from the well-known abilities of the authors we have every reason to anticipate that it will at once take a prominent position among standard works on this subject. It will be copiously illustrated.

DR. HUMPHREY, F.R.S., the Professor of Anatomy at the University of Cambridge, gives notice that his course of lectures on Practical Anatomy will begin on Thursday, Oct. 8, at 9 A.M., and be continued daily. The course on Anatomy and Physiology will commence on Friday, Oct. 23, at 1 P.M., and be continued on Tuesdays, Thursdays, and Saturdays, at the same hour. This course is intended for students of natural science as well as for students of medicine, and gentlemen not requiring certificates are at liberty to attend without fee.

A TELEGRAM received at Hull from the captain of the schooner *Samson*, which has just returned from a cruise in the Arctic regions, announces the discovery of large beds of coal at Spitzbergen.

THE volcanic soil in the neighbourhood of Vesuvius is stated to be an antidote to the potato disease and other fungoid diseases of plants. It is also said that it is found of great value in the treatment of *Phylloxera;* this, however, remains to be proved.

THE inaugural meeting of teachers, students, and friends of the College for Men and Women (with which is incorporated the Working Women's College) will be held at St. George's Hall, Langham Place, on Monday, October 12. The chair will be taken by Mr. Thomas Hughes, Q.C., at 8 P.M. The College is established to afford to men and women occupied during the day a higher education than has generally been within their reach. The classes are taught for the most part gratuitously, and the design is that mutual help and fellowship may be promoted between all members of the College, teachers and students, by the educational work in the classes and the social life of the coffee-room.

THE Statistical Society, that has occupied apartments at No. 12, St. James's Square, for nearly thirty years, as a tenant of the London Library, has recently changed its quarters to the house formerly occupied by the Principal of King's College, and its present address is Somerset House Terrace, Strand, W.C., London (King's College entrance). This change has become necessary by the simultaneous growth and development of both the London Library and the Statistical Society, and is therefore a matter of congratulation to both institutions.

WE have to record the death, on Saturday last, of Dr. William W. Fisher, Downing Professor of Medicine in the University of Cambridge since 1841, when he succeeded Dr. Cornwallis Hewett. Dr. Fisher, from being an undergraduate, first at Trinity and then at Downing College, became Fellow of the latter, and remained so until he accepted his Professorship. He was formerly physician to Addenbrooke's Hospital, and till his death steward and librarian of his College. The stipend of the Professorship is 400*l.* a year with a residence in Downing College; it must be refilled within two months of a vacancy occurring.

THE opening meeting of the approaching session of the Medical Microscopical Society will take place at the Royal Westminster Ophthalmic Hospital on Friday, the 16th inst., at 8 P.M.

ALPHONSE DE CANDOLLE, of Geneva, whose first botanical memoir was published forty-five years ago, has been elected one of the eight foreign associates of the Academy of Sciences at Paris, in the place of Agassiz.

M. MELSENS, a member of the Royal Academy of Belgium, has published a pamphlet describing the verification of lightning-conductors, as practised by him in several monuments of Brussels, for ascertaining if they are in a position to conduct electricity into the humid parts of the earth. The experiments were tried with a Hely machine, and with Daniel elements and galvanometers. In the first instance fifteen of the pupils of the Veterinary School were employed to ascertain if they had received any shock.

THE reptiles of the French Museum have been removed to their new home. The boas had been previously overfed, so that they were as easy to handle by the keepers as so many cables. The crocodiles were most unmanageable, and it was necessary to use nets in order to catch them. Some of the venomous snakes were tempted by food offered to them into small cages, in which they were shut up hurriedly, and removed. Now everything is right, and the several inhabitants of the reptile menagerie are happy and contented in the new building which will be formally opened within a few days by the Minister of Public Instruction.

THE death is announced of one of the most prominent and indefatigable members of Col. Gordon's expedition, Mr. Anson, who succumbed to an attack of fever on the 27th of July. The deceased was the son of Admiral Anson, and was highly esteemed by Col. Gordon for his zeal and usefulness.

M. X. DUCLOUX has discovered and given the name of *Rivotita*, or Rivotite (in honour of the memory of M. Rivot, late Professor of the School of Mines, at Paris), to a new kind of mineral, which is found in small irregular masses, dispersed in a yellowish-white chalk, upon the western slope of the Sierra del Cadi, in the Spanish province of Lerida.

WE have received the Sixth Annual Report of the Cardiff Naturalists' Society, and are pleased to notice that the year just closed has proved most successful; the number of members has increased from 190 to 288, and the finances of the society are in a good condition. During the past year, the committee have organised for the first time a series of scientific and literary lectures, which have been largely successful.

THE additions to the Zoological Society's Gardens during the past week include two Call Ducks (*Anas boschas*), European, presented by Mrs. Wilson; four Little Bustards (*Tetrax campestris*), European, purchased; a Rhesus Monkey (*Macacus erythrœus*) from India; a Solitary Tinamon (*Tinamus solitarius*) from South America; three Lesser Pin-tailed Sand Grouse (*Pterocles exustus*) from North Africa; two Cornish Choughs (*Fregilus graculus*), European, deposited.

SCIENTIFIC SERIALS

THE *Journal of the Chemical Society* for August contains, in addition to the usual abstracts from foreign journals, the following papers communicated to the Society:—On ipomœic acid, by E. Neison and James Bayne. This acid, obtained by the action of nitric acid upon jalapin, has been shown by the authors to be identical with sebacic acid. This conclusion has been arrived at from a comparison of the solubility, melting-point, and composition of the acids. The potassium, barium (normal and acid), lead, and silver salts have been prepared and examined.—Note on New Zealand kauri gum, by M.M. Pattison Muir. The gum is an exudation from a coniferous tree (*Dammara Australis*) imported into this country for the purpose of making varnish. The action of different solvents and of various reagents has been tried, from which it appears that the substance is a mixture of resins with a true gum, and is therefore to be classed as a gum-resin.—On certain compounds of albumin with the acids, by George Stillingfleet Johnson. Compounds with nitric, hydrochloric, sulphuric, orthophosphoric, metaphosphoric, citric, oxalic, tartaric, and acetic acids have been obtained. The method of preparation consists in dialysing white of egg over dilute solutions of the acids. The action of water heated above its boiling point upon these compounds has been studied, and special experiments undertaken to ascertain the nature of the